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## GMV Super Star Clay Target Throwers Limited Warranty

For TWO YEARS from the original date of purchase, GMV Super Star will repair any defects in material or workmanship on PARTS ONLY. These defects must be determined to be defective by our examination.

The owner shall, at his own expense and risk, return the machine or defective parts to the GMV Super Star factory outlet or to a GMV Super Star authorized dealer, with all transportation charges to be prepaid.

All replacement parts will be FOB our factory outlet or our GMV Super Star dealer. We shall not be liable for any drayage or labor costs.

This limited warranty is in addition to any statutory warranty.

We do not authorize any person or representative to make any other warranty, or assume for us liability, other than those contained herein. Any agreement outside of, or contradictory to the foregoing shall be void and of no effect.

The following are not considered defects and are not included in the warranty:

1. Damage resulting from an improper line of voltage.
2. Service required as a result of damage due to misuse.
3. Service required as a result of accidents, alteration, fire flood or acts of God.
4. Service required to regular wear parts such as service cords, throwing arms, microswitches, target retainer O-rings and brushes.

The warranty registration card must be returned to GMV Super Star dealer within 30 days of purchase or warranty is null and void.

This limited warranty ends and our responsibility ceases if any changes are made to the machine, if the serial number is mutilated, altered or removed or if any parts or devices not manufactured by GMV Super Star

# Models and Specification

GMV's product assortment.

Models: GMV ATM, ATM W, 274T, 296T, 455S, 466S, 477S, 566T/577T

Model	ATM	ATM W	274T	296T
No. of machines	1	1	1	1
Capacity	560	560	250, 400	250, 400
Weight	375 lb. (170 kg)	375 lb. (170 kg)	374 lb. (170 kg)	385 lb. (175 kg)
Height	37"	37"	31-37"	42-48"
Width	38"	38"	38"	38"
Depth	35"	35"	35"	35"
Power	115 V	115 V	110 V 60 Hz or 220 V 50 Hz	110 V 60 Hz or 220 V 50 Hz
No. of motors	2 (1.0 Hp, 0.5 Hp)	3 (1.0 Hp, 0.5 Hp)	2 (1.0 Hp, 0,25 Hp)	3 (1.0 Hp, 0,25 Hp)
Interrupter	Programmable	Programmable	Programmable	Programmable
Throwing angles	30° 35° 45°	30° 35° 45°	30° 35° 45°	30° 35° 45°
Throwing heights				

Model	455S	466S	477S	566T/577T
No. of machines	2	1	1	1
Capacity	400, 700, 900	250, 400, 700, 900	250, 400, 700	400
Weight	233 lb. (106 kg)	233 lb. (106 kg)	231 lb. (105 kg)	250 lb. (113 kg)
Height	34", 45", 54"	26", 34", 45", 54"	26", 34", 45"	47,5"
Width	43"	43"	43"	48"
Depth	37"	37"	37"	52"
Power	110 V 60 Hz or	110 V 60 Hz or	12 V DC	110 V 60 Hz,
No. of motors				
Interrupter				
Throwing angles				
Throwing heights				

This is general numbers only

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**DANGER**

Read this Installation and Operating Guide before operating your unit.

# Safety Precautions

## Personal Security

To assure the finest performance, please read this manual carefully and let personnel with experience of similar equipment, assemble, disassemble and transport the equipment.

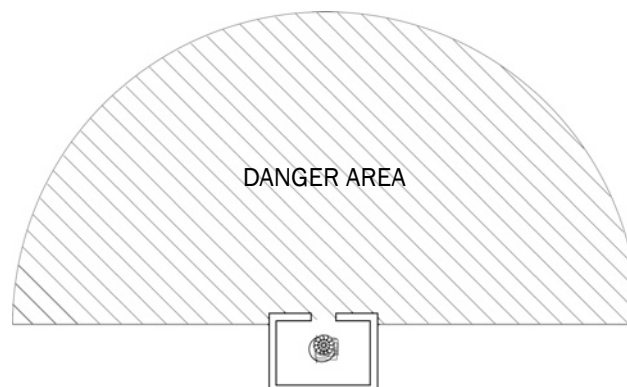
Every person involved with the set up, service, maintenance and daily operation of this equipment must read and follow the safety precautions contained in this manual.

When performing service and maintenance:

- Turn the power off, before entering the house of the thrower.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

No persons or objects should be kept within the danger area. There is a risk of personal injury from moving objects and clay targets.

No one should be in the house of the thrower or in the danger area when the main



The size of the danger area, depends on the settings of the thrower at the local site.

The radius should at least be the maximum distance of thrown clay targets.

## Equipment Security

The equipment must be bolted down on a secure base when in use.

The main safety release shall be positioned in an appropriate location outside of the danger area.

Check safety equipment functions often.

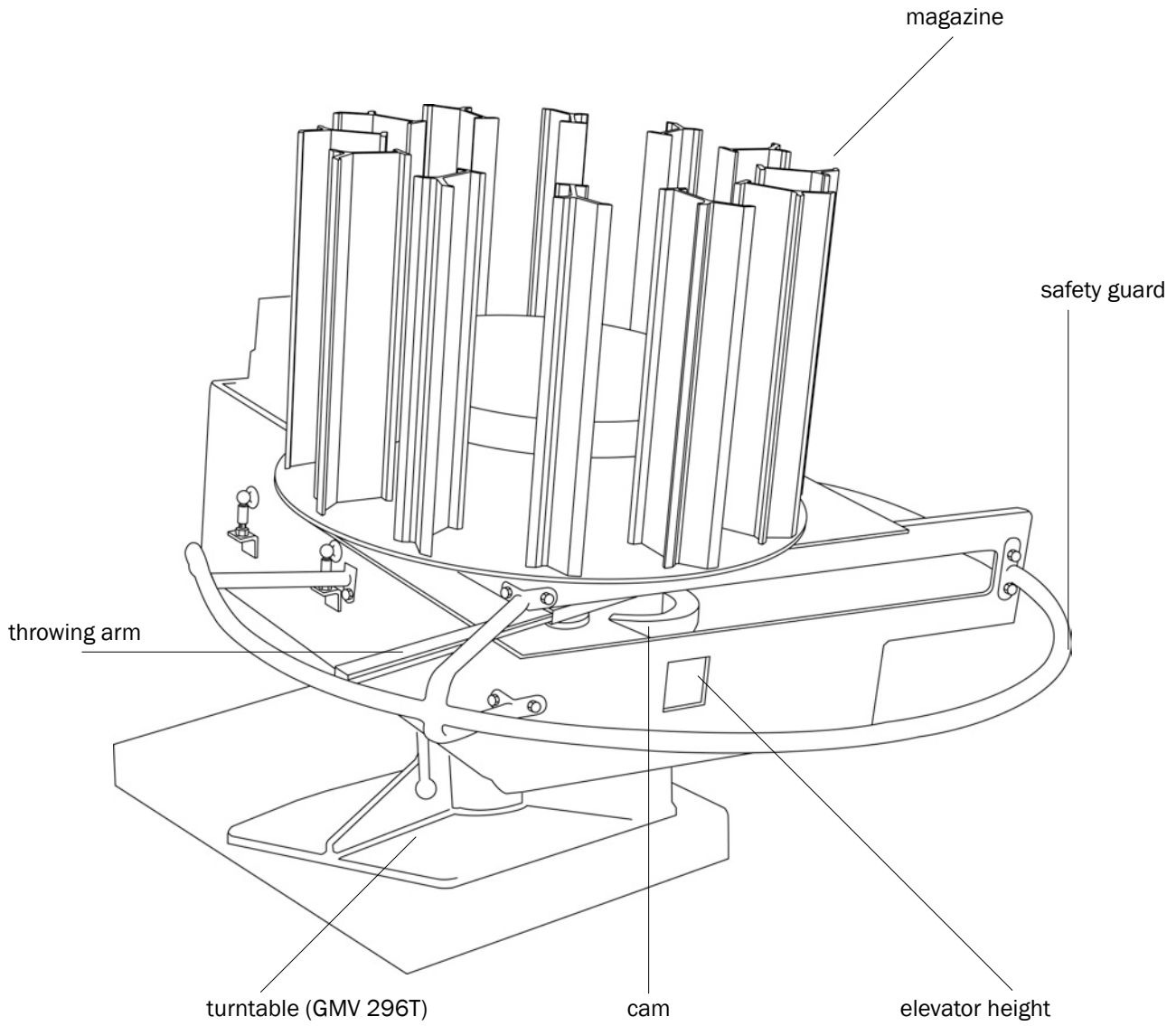
- Check that the main safety release is working properly.
- The safety guards must always be mounted on the machine, when the machine is in use.

After every use, shut off the power to the machine using the main safety release and uncock the machine.

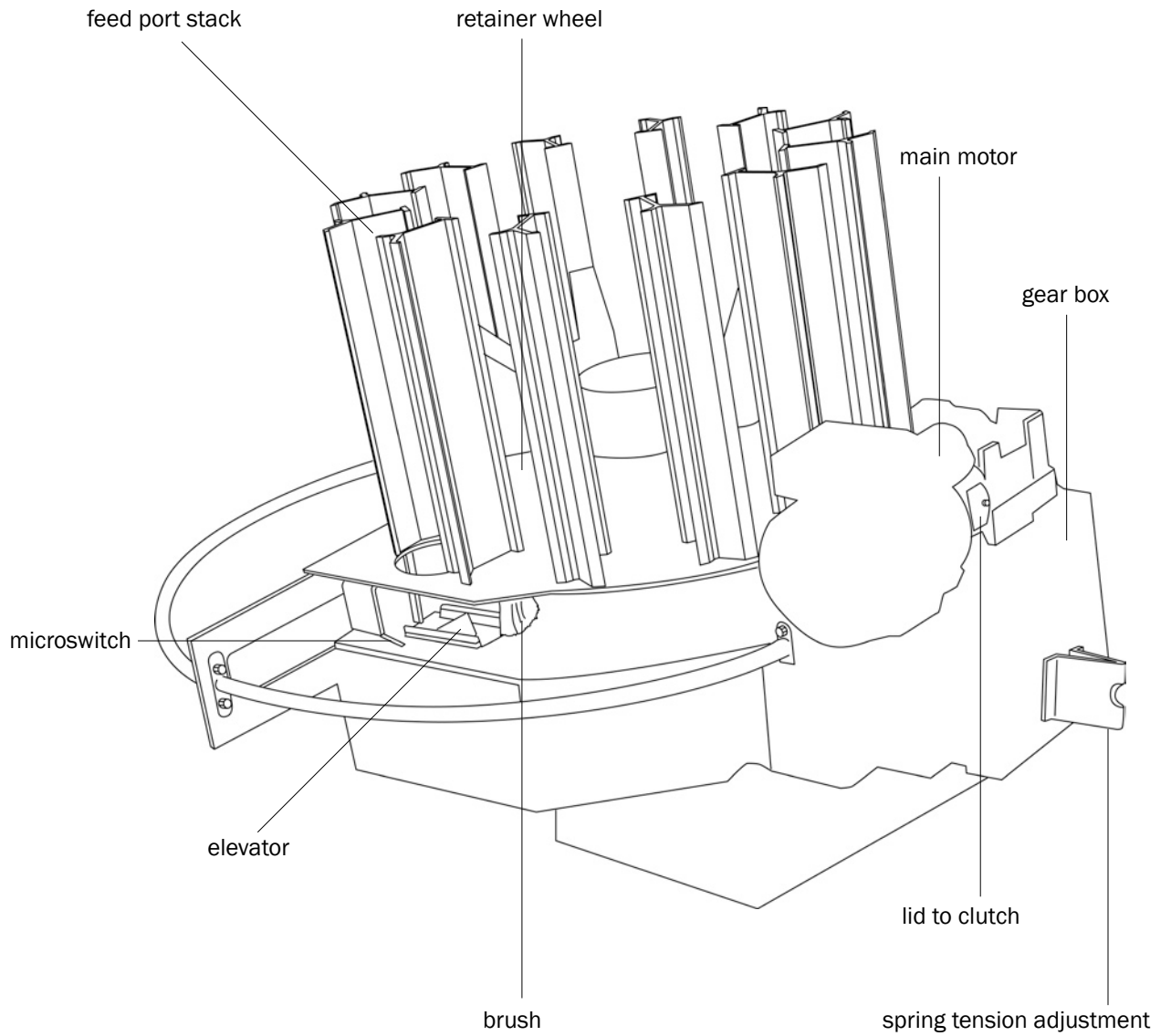
Observe all electrical equipment as being current carrying.

GMV will not be held responsible for any damage resulting from use of this equipment with voltage other than specified.

# General Illustration



Front

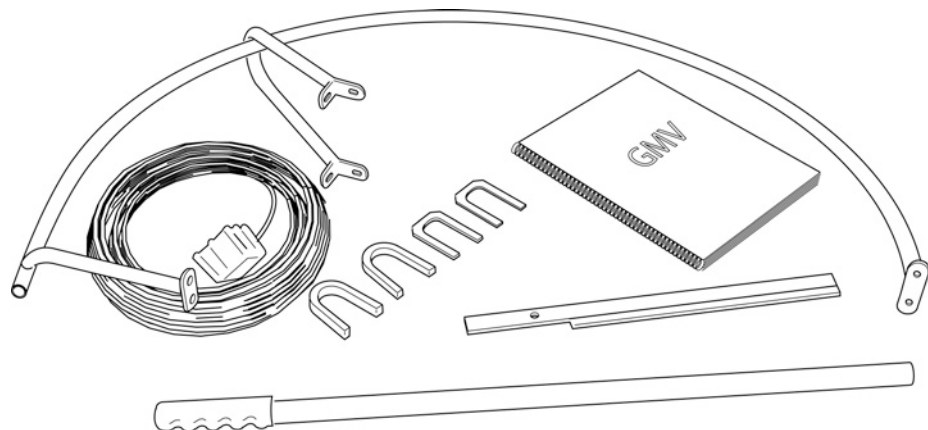


Rear

# Before Installation

## Unpacking

1. Remove all packing materials from the equipment.
2. Check for any visual damage to the equipment.
  - If any damage has occurred to the equipment during shipping, please contact the transport company as well as your GMV Super Star dealer.
3. Please make sure that the following parts are included with the machine:
  - Safety guards
  - Spring tension adjustment rod
  - Four spring tension adjustment spacers: extra thin, small, medium and large
  - Throwing arm
  - Release cord
  - Installation and Operating Guide with a Warranty Registration Card



## Power Supply

Make sure that it is enough power for the motors to produce full effect not to cause disturbances or damage to the motor. When in operation, each motor requires approximately 30 Amps to start up and 12 Amps to operate.

# Installation

## DANGER

Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

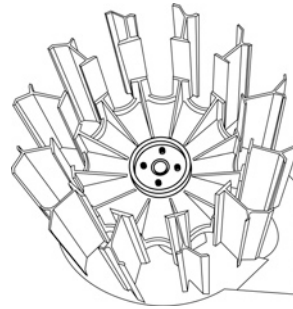
Remove the transportation bracket before clay target launch!

Beware of the throwing arm's speed when it releases.

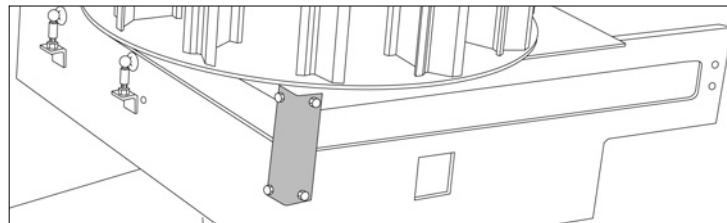
## GMV 200 Trap and 400 Skeet Series

The preferred base for the machine, is a wood mount onto which the thrower's base plate can be bolted.

1. Unscrew the four Allen bolts in the magazine center. Lift the magazine off of the machine.



2. Put the machine in place on a wood base.
3. Put the magazine back in place and secure it.
4. Remove the transportation bracket.



5. Attach the throwing arm (see section of The Throwing Arm).
6. Fasten the safety guards.
7. Adjust the throwing angle:
  - GMV 200 series
    - Adjust the throwing angles (see section of Installation Adjustments). Secure to base.
  - GMV 400 series
    - Secure to base. Loosen bolts to adjust throwing angles (see section of Installation Adjustments).

**DANGER**

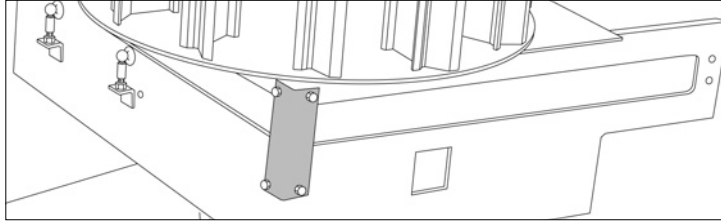
Do not plug in the machine before or during installation.

Remove the transportation bracket before clay target launch!

Beware of the throwing arm's speed when it releases.

## GMV 500 Sporting Series

1. Put the machine in place on a wood base.
2. Secure to base. Adjust throwing angles (see section of Installation Adjustments).
3. Remove the transportation bracket.



4. Attach the throwing arm (see section of The Throwing Arm).

# Installation Adjustments

**DANGER**

Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

Do not load the machine with broken targets.

Clear the table and the elevator of any fragments of broken targets.

Beware of the throwing arm's speed when it releases.

## GMV 200 Trap Series

### Adjustment of Throwing Angles

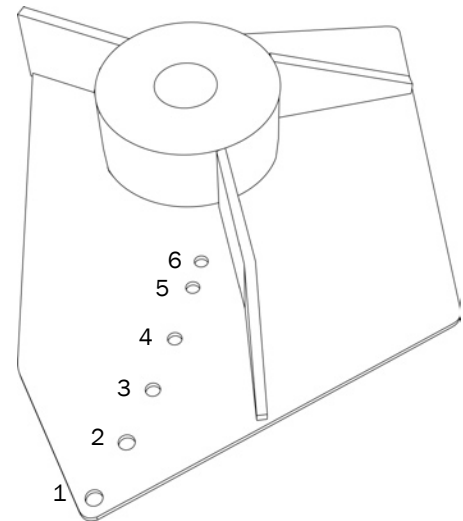
1. Fill the magazine with some targets, except for the feed port stack.
2. Rotate the magazine by releasing a target and fill the empty stack.
3. Turn the machine to the left-most position, to find the proper angle of the target path.
4. Do the same to the right-most position
5. Secure the machine to the wood base.

### Throwing Angles

The six holes are found on the turntable.

Hole	Angle
1	$17.5^\circ + 17.5^\circ = 35^\circ$
2	$20^\circ + 20^\circ = 40^\circ$
3	$25^\circ + 25^\circ = 50^\circ$
4	$30^\circ + 30^\circ = 60^\circ$ UIT min.
5	$37^\circ + 37^\circ = 74^\circ$
6	$45^\circ + 45^\circ = 90^\circ$ UIT max.

Hole 1 = Winchester Hole 2  
This is a general guide only.



## Machine Placement in House for GMV 200 Series

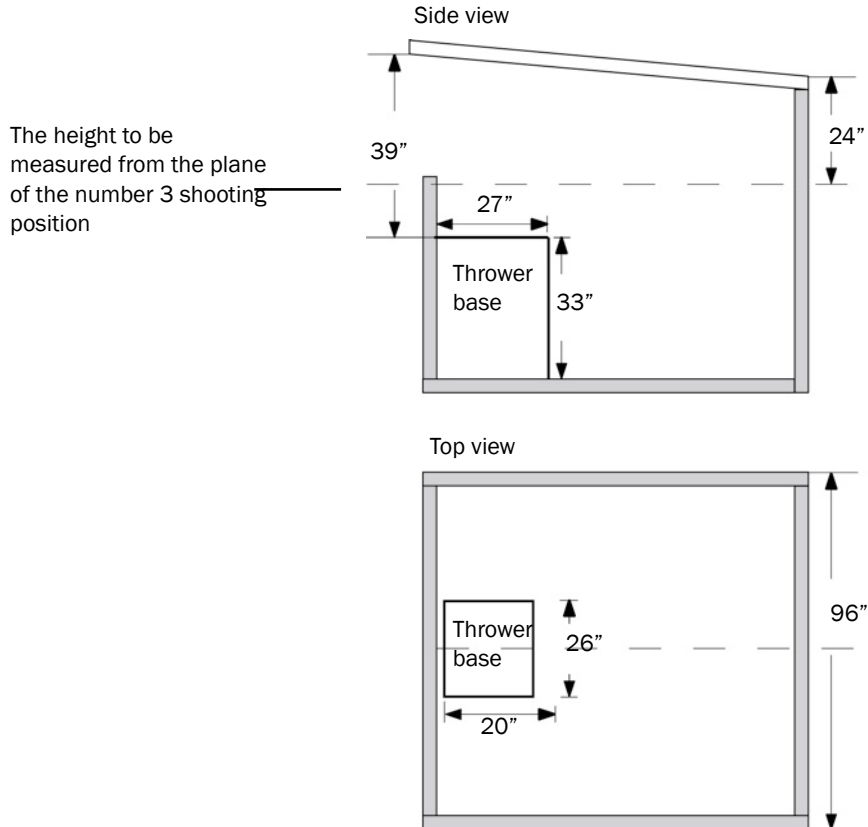
ATA Pitted House minimum installation height.

GMV 274T 400 target capacity 38"

GMV 274T 250 target capacity 32"

GMV 296T 400 target capacity 41"

GMV 296T 250 target capacity 34"



### DANGER

Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

Beware of the throwing arm's speed when it releases.

## GMV 400 Skeet Series

### Adjustment of Throwing Angles

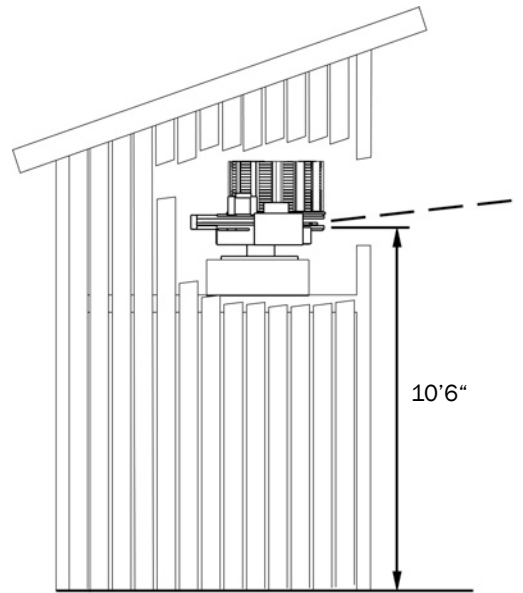
Prior to installing the GMV skeet machines, make sure the height of the base is correct.

The brown and blue wires that protrudes from the machine case are to be connected to the timer.

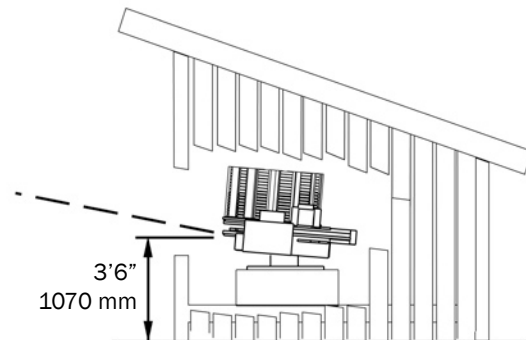
1. Secure the machine to a wood base.
2. Fill the magazine with some test targets, except for the feed port stack.
3. Release a target to rotate the magazine and fill the empty stack.
4. Turn the machine to the left-most position, to find the proper angle of the target path.
5. Do the same to the right-most position.
6. Loosen the bolts to adjust.

## Machine Placement in Houses for GMV 400 Series

High House



Low House



### DANGER

Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

## GMV 500 Sporting Series

### Adjustment of Throwing Angles

#### Vertical Angle

- Move the turnbuckle rod up or down to get the right angle.

#### Side Angle

1. Hold on to the machine and loosen the black handle on the bottom front of the base.
2. Tilt it either way and lock the handle once you reach the desired angle.

**DANGER**

# Operating Features

Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

Do not load the machine with broken targets.

Clear the table and the elevator of any fragments of broken targets.

## Loading the Machine

Fill the magazine with clay targets, except for the feed port stack.

1. Turn on the power.
2. Release a target to rotate the magazine
3. Shut off the power and fill the empty stack.

## Spring Tension Adjustment

The factory trajectory setting, with a standard spring is 45 yards (42 m) for GMV 200 Trap Series, and 60 yards (55 m) for GMV 400 Skeet Series. The machine comes with four spacers: extra thin (2 mm), small (5 mm), medium (10 mm) and large (15 mm). The extra thin spacer is for fine tune adjustments.

When spacers are added, the distance of trajectory is increased. The length of trajectory will vary depending on the air density, wind, altitude and relative humidity, as well as the type of target used.

Do not add more spacers than the below combinations, as this will put undue stress

Example:

Spacers	Standard Spring (yellow)		Optional Spring (black) UIT	
	Yards	Meters	Yards	Meters
Factory Settings for GMV 200 Series	45	42	64	59
1 small	50	46	68	62
1 medium	55	51	72	66
1 large	60	55	78	72
1 large + 1 small	65	60	82	75
1 large + 1 medium	70	64	86	79
1 large + 1 medium + 1 small	75	69	90	88

This is a general guide only.

**DANGER**

Before entering the house of the thrower or the danger area:

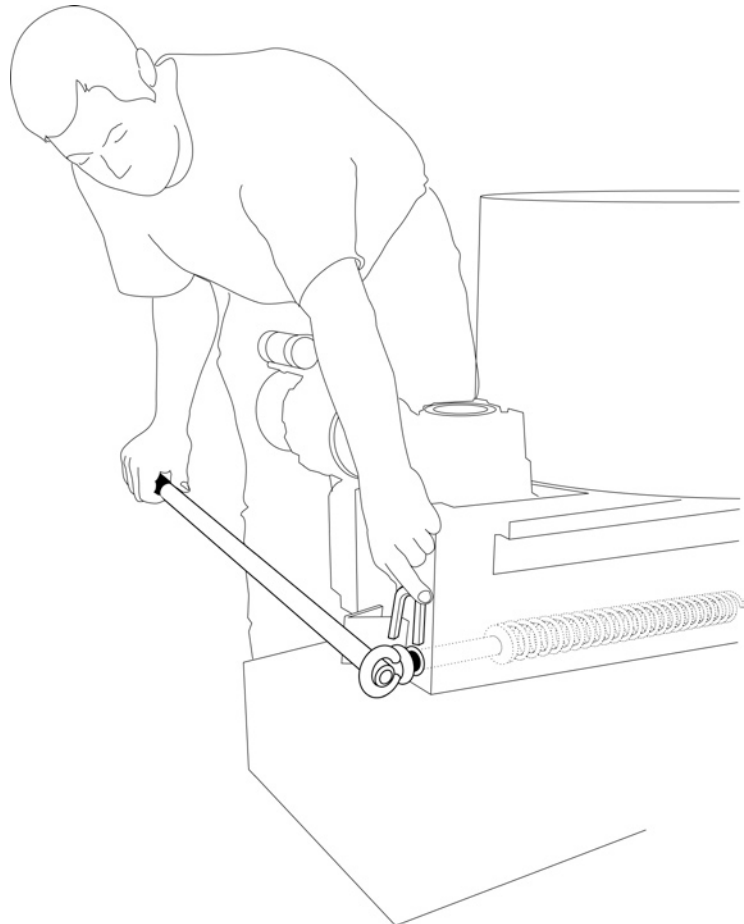
- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

Watch your fingers. Do not get caught.

Do not use more than four spacers for distance adjustments. (If greater distance is desired, change the spring.)

## Adjustment of Target Distance

1. Insert the spring tension adjustment rod into the eyelet situated on the right side of the machine.
2. Pull out the eyelet, then place the spacers between the eyelet and the frame of the machine.



## How the Machine Operates

- When the release button is pushed, a signal goes to the machine. The current to the electromagnet breaks, activating the clutch. The throwing arm releases.
- When the target is released, the microswitch engages the electromagnetic clutch, which is located between the motor and the worm gear. This causes the axle of the machine to rotate and the machine to re-cock.
- The target magazine rotates a twelfth of a turn and is then mechanically locked, when the machine is cocking.
- As the magazine rotates, the elevator moves up to receive the bottom target from the feed port stack. The rest of the targets in the feed port stack is held in place by the retainer wheel.
- When the throwing arm reaches the microswitch, the power supply to the electromagnetic clutch breaks. The electromagnet reconnects to the power supply.
- The machine is ready to throw a new target.

## Release System for GMV 200 Trap Series

The release system consists of a release cord with a push button assembly connected to an outlet on the machine.

The machine can also be connected to a Radio Release System or a Voice Release System. The power supply for the release system is prepared for 24 volt D.C.

## Release System for GMV 400 Skeet Series

### 24 volt with UIT Regulated Timer

The release system consists of a release cord with a timer and a push button assembly connected to an outlet on the machine.

The function of the release system can briefly be described as follows:

The delay is adjustable to between 0 to 5 seconds with a knob on the timer.

As soon as a button is pushed the indicator lights will light up, one on each house, according to which button is pushed. A low voltage pulse from the timer affects a relay in the machine.

### 24 volt or 115 volt without Timer

The release system consists of a release cord with a push button assembly connected to an outlet on the machine.

## Wiring

Please follow the instructions concerning wiring of your machine found as an appendix in this manual. All GMV Super Star models has its own field wiring chart.

# Preventative Maintenance

## DANGER

Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

Do not load the machine with broken targets.

Clear the table and the elevator of any fragments of broken targets.

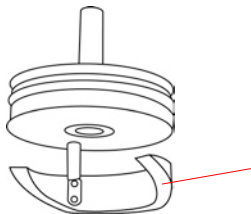
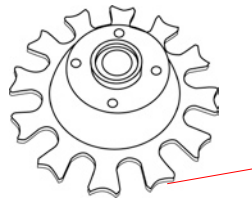
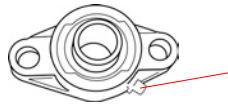
Beware of the throwing arm's speed when it releases.

## General

Keep the machine and the area around clean and remove any target fragments and other dirt daily.

If the machine has not been properly shut of using the GMV safety release, hand release the throwing arm by standing behind the machine and carefully push the arm counter-clockwise.

## Greasing



- Grease the grease nipples after 100,000 targets or once a year. There are four grease nipples on the GMV 200 Trap Series and two on the GMV 400 Skeet Series and GMV 500 Series.
- Grease the magazine index wheel (GMV 15) frequently. If the surface is dry, grease the twelve fingers on the wheel.
- Grease the elevator cam (GMV 65) frequently. If the surface is dry, grease it.
- The worm gears are filled with synthetic grease and

do not need to be changed at any time, as long as there is no abnormal leakage.

**DANGER**

Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

Beware of the throwing arm's speed when it

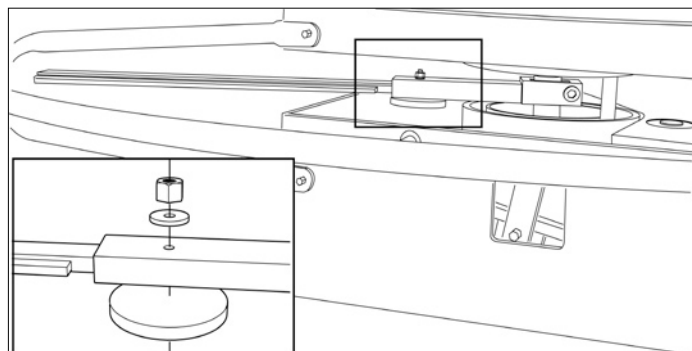
## The Throwing Arm

Avoid using the machine without targets as this will result in greater stress on the throwing arm.

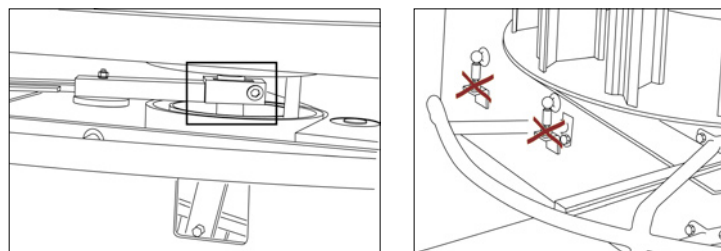
After extended usage, the throwing arm may become fatigued and the rubber molding worn. Check it often and replace when necessary.

### Throwing Arm Replacement

1. Loosen the screw that holds the arm in the throwing arm holder.
2. Pull the throwing arm free.
3. Replace the throwing arm. Make sure the washer is on the underside of the arm holder.



4. Securely tighten the screw.
5. Adjust the height of the arm by loosening the Allen bolt on the throwing arm holder. (Do not adjust the height with the screws for table adjustment)



6. Move the arm up or down as required. The distance between the rubber on the throwing arm and the first rim of the clay target should be  $1/32$ " (1 mm).



**DANGER**

## The Clutch

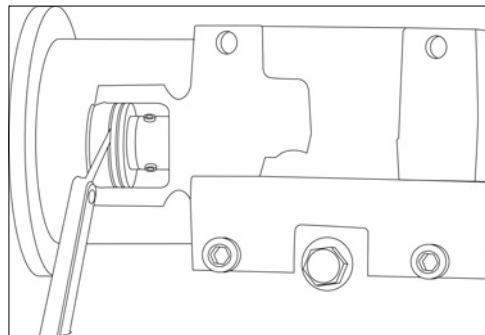
Before entering the house of the thrower or the danger area:

- Turn the power off.
- Always turn the power off using the main safety release.
- Make sure the machine is uncocked.

Beware of the throwing arm's speed when it

The electric magnetic clutch cocks the machine. The clutch is located between the main motor and the gearbox. The distance between the rotor and the stator should be between 0.012" (0.3 mm) to 0.016" (0.4 mm). If the distance is less than this, the machine may start windmilling. If the distance is greater than this, the machine will not cock.

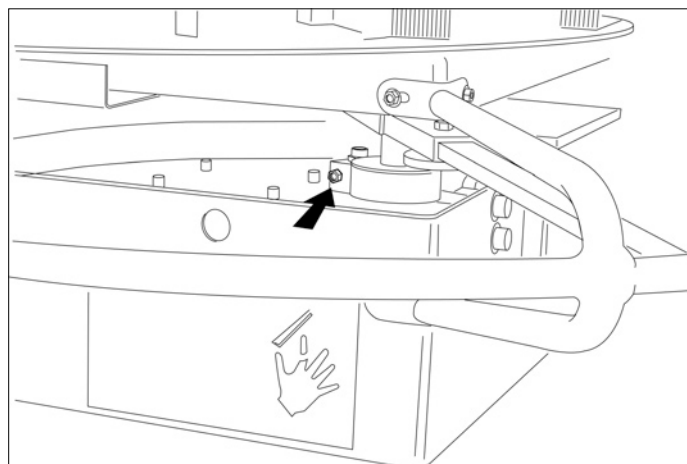
- To adjust the clutch, loosen the two setscrews situated on the gearbox-input shaft and then slide the clutch forward or backward until the correct distance is obtained. Use a feeler gauge to obtain the correct distance.



## The Break

The break is situated on the throwing arm shaft. When the throwing arm is released it should not stop with a swivel. This will put a great strain on the throwing arm.

- To adjust the break, use an Allen key. Adjust the Allen bolt on the break, until the arm stops softly.



# Troubleshooting

## DANGER

Read the safety instructions before tampering with the machine.

If problems arise, the following may be of some help. If you need further assistance, please do not hesitate to contact your GMV Super Star dealer.

Problem	Cause	Solution
The machine does not start	No power	Check the power supply. If you have power, check the overload breaker situated on the side of the motor connector boxes. If there is no power, call an electrician.
	Faulty release cord	Check the release cord with an Ohm meter. If there is no resistance in one or more wires, cut approximately two feet of the cord on the push button end, then reconnect the push button.
No target releases	Faulty relay	Open the junction box on the machine and check the relay with the help of the release button on the relay. If no target is released replace the relay.
	The target retainer wheel O-rings are damaged	Check that the three O-rings on the target retainer wheel (inside the machine stacks) are not damaged. If the O-rings are damaged replace them.
	The retainer wheel is not turning	Remove the target magazine and the retainer wheel. Then grease the shaft. Reassemble the machine again.
Two targets are released at the same time	Different target sizes are used, or the targets may be wet	Remove the targets and make sure all the stacks are loaded with the same size targets.
	Broken targets	Clear the throwing table and the elevator of any broken target fragments.
Broken targets	The throwing arm is situated wrong	Adjust the throwing arm. (See section of the Throwing Arm)
	The throwing arm is bent	Replace the throwing arm.
	The target retainer wheels O-rings are damaged	Check the O-ring on the inside target retainer wheels (inside the magazine stacks). If it is damaged, replace it.

## TROUBLESHOOTING

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Problem	Cause	Solution
Broken targets	The target retainer wheel is turning	Remove the target magazine and the retainer wheel. Clean the retainer wheel hole as well as the shaft, then grease with a light oil. Reassemble.
	Different target sizes and makes are used, or the targets may be wet	Remove the targets and make sure to use only dry targets and the same make of targets.
	The throwing arm may be	
The machine is throwing	Faulty push button	Disconnect the release cord. If the machine stops throwing targets, change the push button switch.
	Faulty microswitch	Lift the metal finger on the microswitch with e.g. a rubber band. If the machine does not stop throwing the targets, change the microswitch.
	Faulty clutch	To adjust the clutch take off the cover plate located on the worm gears neck. If the clutch is to function properly there should be a margin of 0.012" to 0.016" between the two parts of the clutch. To adjust loosen the two set screws situated on the input shaft on the gear box and adjust accordingly.

